EDITED - 03/06/2007

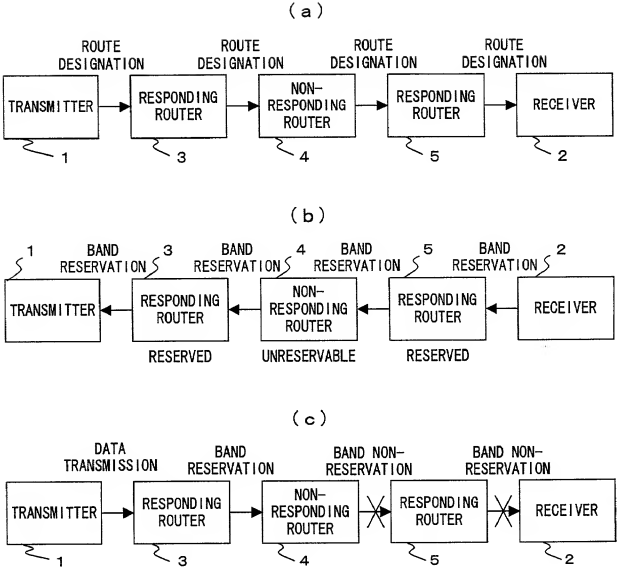

FIG. 1

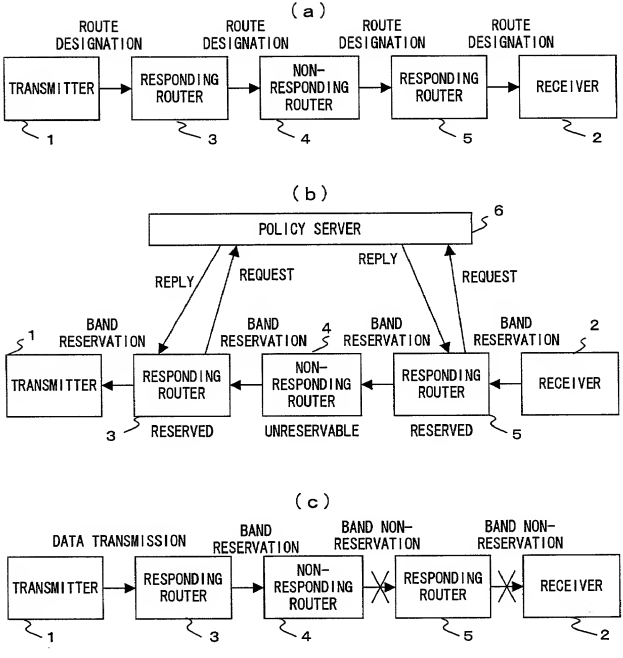
(a)
ROUTE DESIGNATION
ROUTE DESIGNATION
ROUTE DESIGNATION
ROUTE DESIGNATION
TRANSMITTER
RESPONDING ROUTER
NON-RESPONDING ROUTER
RESPONDING ROUTER
RECEIVER
1
3
4
5
2
(b)
POLICY SERVER
6
REPLY
REQUEST
REPLY
REQUEST
BAND RESERVATION
BAND RESERVATION
BAND RESERVATION
BAND RESERVATION
1
4
2
TRANSMITTER
RESPONDING ROUTER
NON-RESPONDING ROUTER
RESPONDING ROUTER
RECEIVER
3
RESERVED
UNRESERVABLE
RESERVED
5
(c)
DATA TRANSMISSION
BAND RESERVATION
BAND NON-RESERVATION
BAND NON-RESERVATION
TRANSMITTER
RESPONDING ROUTER
NON-RESPONDING ROUTER
RESPONDING ROUTER
RECEIVER
1
3
4
5
2

FIG. 2

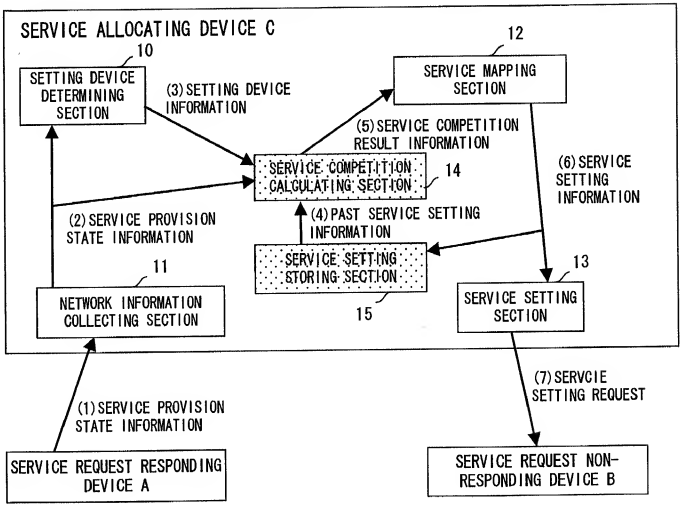
SERVICE ALLOCATING DEVICE C
10
SETTING DEVICE DETERMINING SECTION
(3) SETTING DEVICE INFORMATION
12
SERVICE MAPPING SECTION
(5) SERVICE COMPETITION RESULT INFORMATION
SERVICE COMPETITION CALCULATING SECTION
14
(6) SERVICE SETTING INFORMATION
(2) SERVICE PROVISION STATE INFORMATION
(4) PAST SERVICE SETTING INFORMATION
SERVICE SETTING STORING SECTION
13
11
NETWORK INFORMATION COLLECTING SECTION
15
SERVICE SETTING SECTION
(7) SERVCIE SETTING REQUEST
(1) SERVICE PROVISION STATE INFORMATION
SERVICE REQUEST RESPONDING DEVICE A
SERVICE REQUEST NON-RESPONDING DEVICE B

FIG. 3

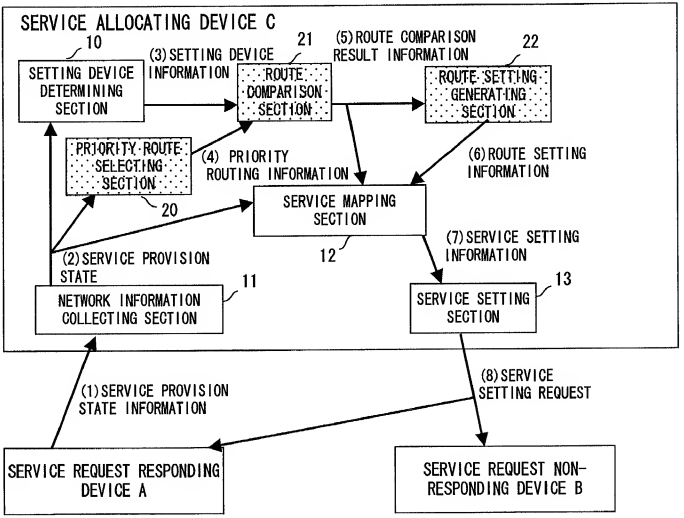
SERVICE ALLOCATING DEVICE C
10
SETTING DEVICE DETERMINING SECTION
(3) SETTING DEVICE INFORMATION
21
ROUTE COMPARISON SECTION
(5) ROUTE COMPARISON RESULT INFORMATION
22
ROUTE SETTING GENERATING SECTION
PRIORITY ROUTE SELECTING SECTION
20
(4) PRIORITY ROUTING INFORMATION
(6) ROUTE SETTING INFORMATION
SERVICE MAPPING SECTION
12
(7) SERVICE SETTING INFORMATION
(2) SERVICE PROVISION STATE
11
NETWORK INFORMATION COLLECTING SECTION
13
SERVICE SETTING SECTION
(1) SERVICE PROVISION STATE INFORMATION
(8) SERVICE SETTING REQUEST
SERVICE REQUEST RESPONDING DEVICE A
SERVICE REQUEST NON-RESPONDING DEVICE B

FIG. 4

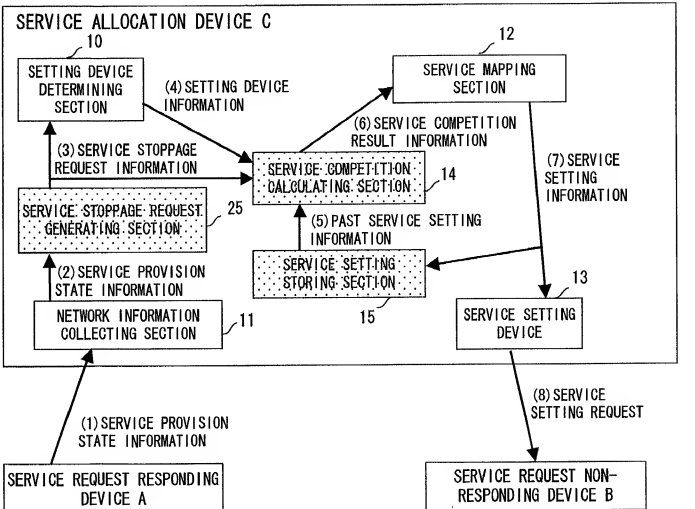
SERVICE ALLOCATION DEVICE C
10
SETTING DEVICE DETERMINING SECTION
12
SERVICE MAPPING SECTION
(4) SETTING DEVICE INFORMATION
(6) SERVICE COMPETITION RESULT INFORMATION
(3) SERVICE STOPPAGE REQUEST INFORMATION
SERVICE COMPETITION CALCULATING SECTION
14
(7) SERVICE SETTING INFORMATION
SERVICE STOPPAGE REQUEST GENERATING SECTION
25
(5) PAST SERVICE SETTING INFORMATION
(2) SERVICE PROVISION STATE INFORMATION
SERVICE SETTING STORING SECTION
13
NETWORK INFORMATION COLLECTING SECTION
11
15
SERVICE SETTING DEVICE
(8) SERVICE SETTING REQUEST
(1) SERVICE PROVISION STATE INFORMATION
SERVICE REQUEST RESPONDING DEVICE A
SERVICE REQUEST NON-RESPONDING DEVICE B

FIG. 5

EP1144960A1

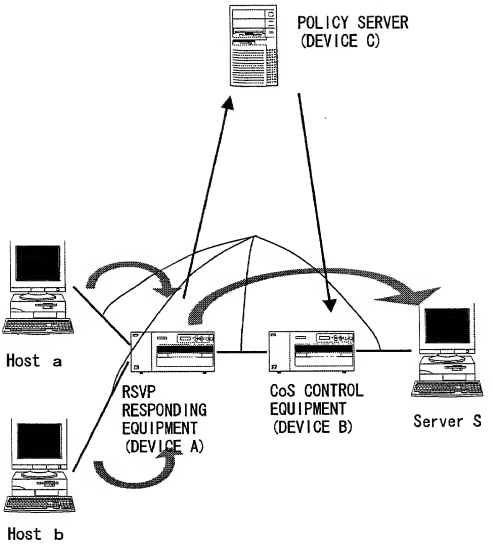

FIG. 6

JP2003-099368A

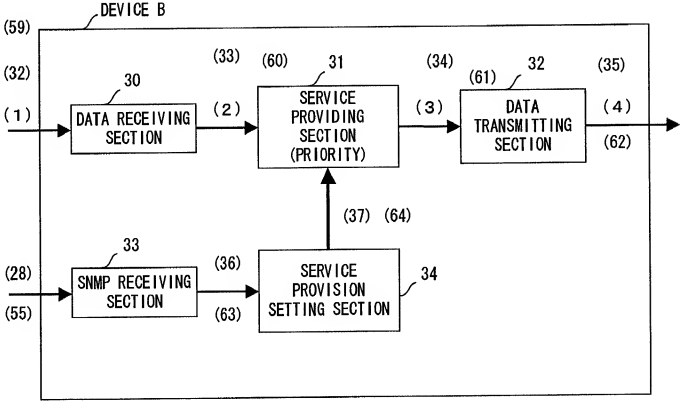

FIG. 7

TOSHIBA 99053660

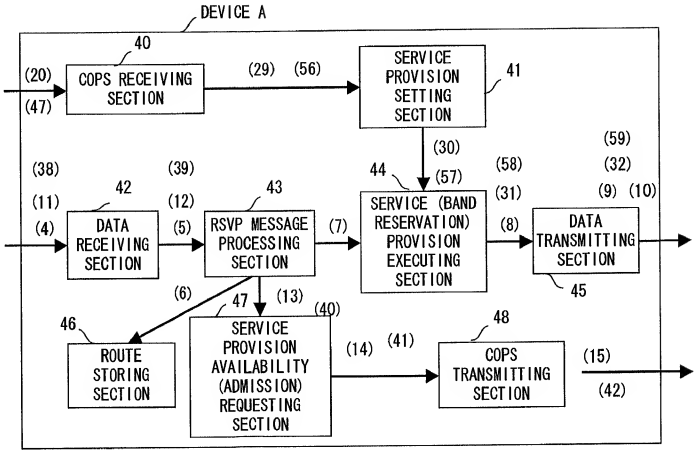

FIG. 8

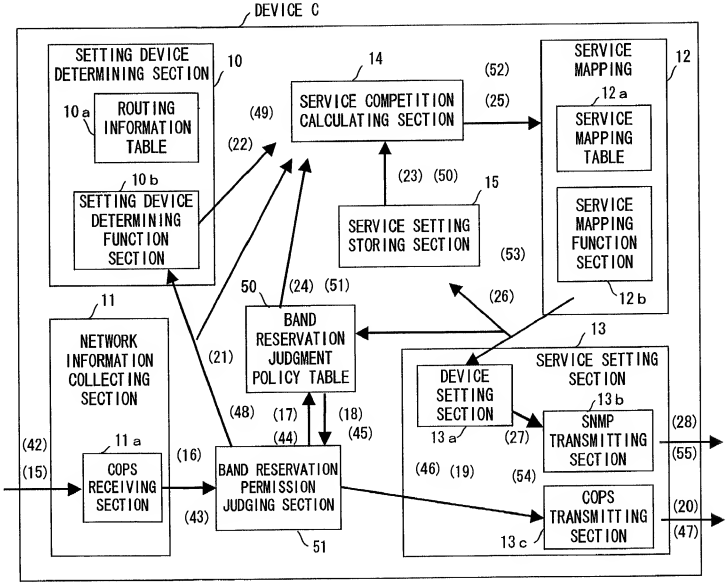
DEVICE C
SETTING DEVICE DETERMINING SECTION
10
10a
ROUTING INFORMATION TABLE
10b
SETTING DEVICE DETERMINING FUNCTION SECTION
14
SERVICE COMPETITION CALCULATING SECTION
15
SERVICE SETTING STORING SECTION
SERVICE MAPPING
12
12a
SERVICE MAPPING TABLE
SERVICE MAPPING FUNCTION SECTION
12b
11
NETWORK INFORMATION COLLECTING SECTION
11a
COPS RECEIVING SECTION
50
BAND RESERVATION JUDGMENT POLICY TABLE
BAND RESERVATION PERMISSION JUDGING SECTION
51
13
SERVICE SETTING SECTION
DEVICE SETTING SECTION
13a
13b
SNMP TRANSMITTING SECTION
13c
COPS TRANSMITTING SECTION
(15)
(16)
(17)
(18)
(19)
(20)
(21)
(22)
(23)
(24)
(25)
(26)
(27)
(28)
(42)
(43)
(44)
(45)
(46)
(47)
(48)
(49)
(50)
(51)
(52)
(53)
(54)
(55)

FIG. 9

(a)

50

USER NAME	USER PRIORITY	CURRENTLY RESERVED BAND	TOTAL ALLOWABLE BAND
Kurose	5	0 Mbps	5 Mbps
Nomura	10	0 Mbps	10 Mbps

BAND RESERVATION JUDGMENT POLICY TABLE

(b)

15a

USER NAME	ROUTE IN USE	CURRENTLY RESERVED BAND	SETTING DEVICE
Kurose	S, B, A, a	5 Mbps	B:3

DATA TABLE STORED IN THE SERVICE SETTING STORING SECTION 15

15b NETWORK EQUIPMENT RESOURCE CONTENT TABLE

DEVICE IP ADDRESS	TYPE	CORRES-PONDENCE	TOTAL AMOUNT	REMAINING AMOUNT
B	PRIORITY QUEUE 3	5~10Mbps	1	0
	PRIORITY QUEUE 2	2~4Mbps	5	5
	PRIORITY QUEUE 1	0~1Mbps	10	10
A	QoS	0~100Mbps	100Mbps	100Mbps

(c)

12a

DEVICE IP ADDRESS	SETTING PROTOCOL	SETTING CONTENT	SETTING MAPPING INFORMATION
B	SNMP	PRIORITY QUEUE (1, 2, 3)	IF 5Mbps OR MORE IS REQUESTED, TO QUEUE 3. IF 2Mbps OR MORE IS REQUESTED, TO QUEUE 2.
A	COPS	5Mbps GUARANTY QUEUE (1) 10Mbps GUARANTY QUEUE (2)	TO QUEUE NUMBER CORRESPONDING TO A REQUEST BAND

SERVICE MAPPING TABLE

FIG. 10

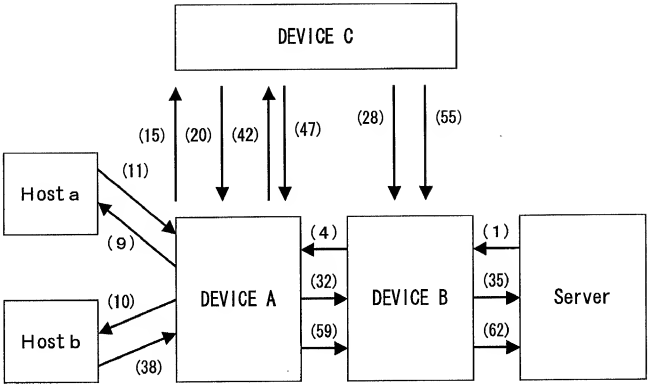
DEVICE C
(15)
(20)
(42)
(47)
(28)
(55)
Host a
(11)
(9)
Host b
(10)
(38)
DEVICE A
(4)
(32)
(59)
DEVICE B
(1)
(35)
(62)
Server

FIG. 11

FOR INTERNAL USE ONLY

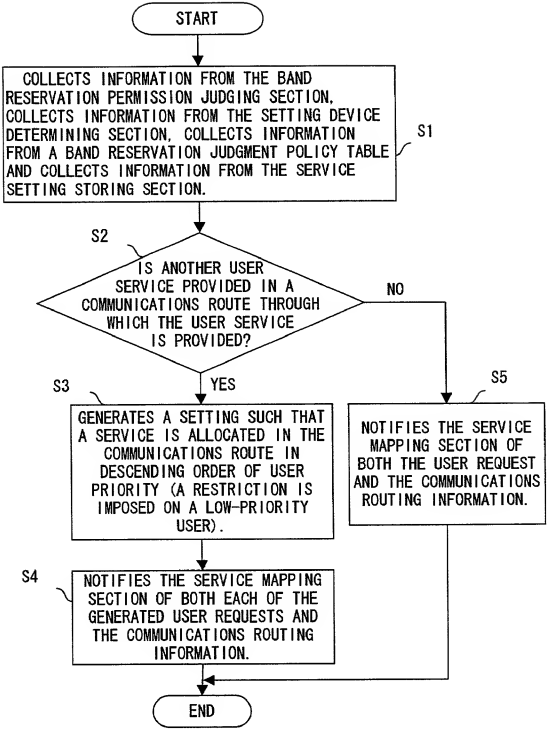

FIG. 12

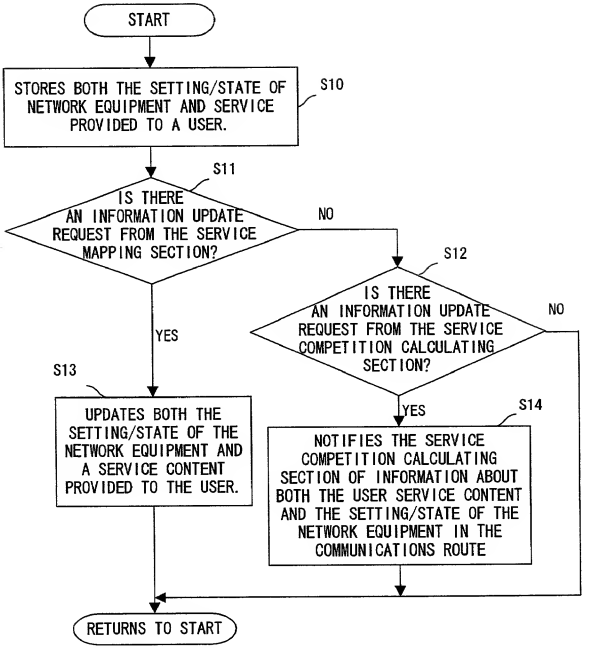
START
STORES BOTH THE SETTING/STATE OF NETWORK EQUIPMENT AND SERVICE PROVIDED TO A USER.
S10
S11
IS THERE AN INFORMATION UPDATE REQUEST FROM THE SERVICE MAPPING SECTION?
NO
YES
S12
IS THERE AN INFORMATION UPDATE REQUEST FROM THE SERVICE COMPETITION CALCULATING SECTION?
NO
YES
S13
UPDATES BOTH THE SETTING/STATE OF THE NETWORK EQUIPMENT AND A SERVICE CONTENT PROVIDED TO THE USER.
S14
NOTIFIES THE SERVICE COMPETITION CALCULATING SECTION OF INFORMATION ABOUT BOTH THE USER SERVICE CONTENT AND THE SETTING/STATE OF THE NETWORK EQUIPMENT IN THE COMMUNICATIONS ROUTE
RETURNS TO START

FIG. 13

JP03-188650

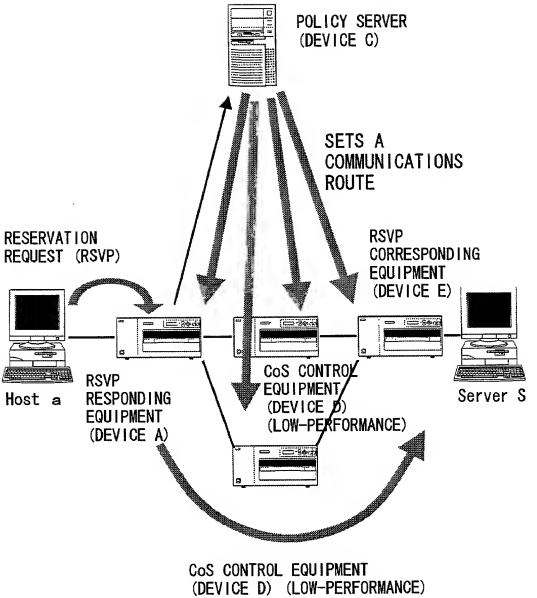

FIG. 14

JP2011-99868A

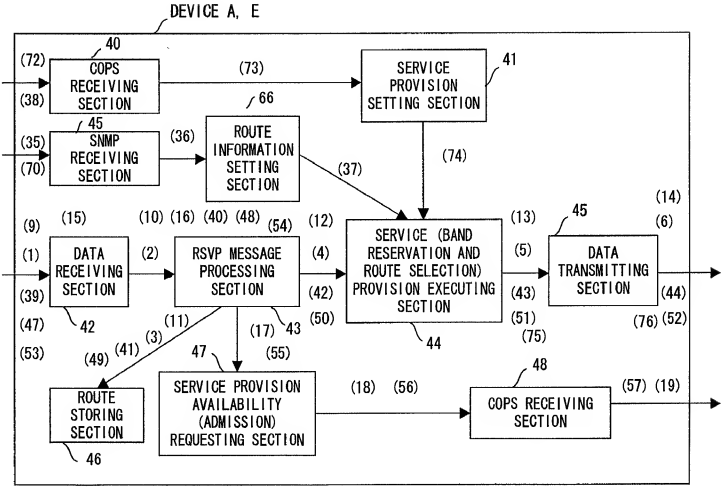

FIG. 15

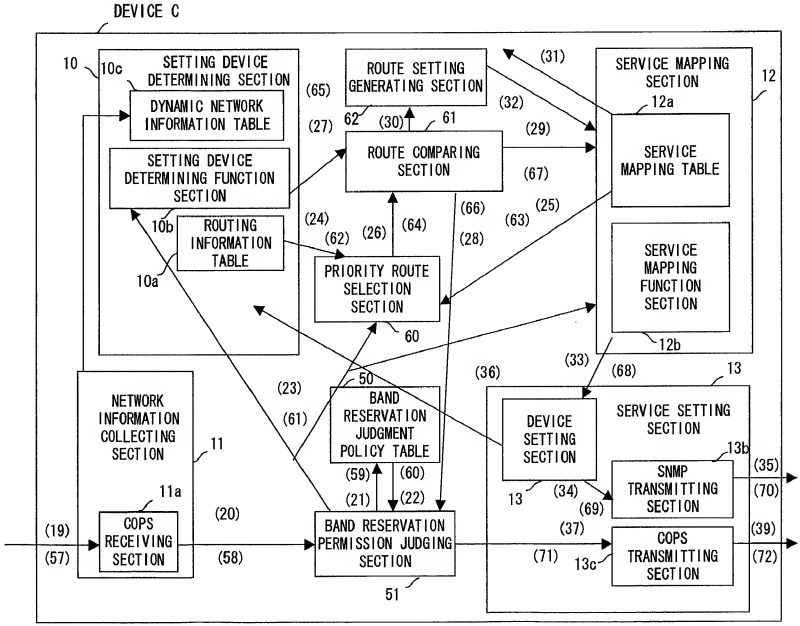
DEVICE C
10
10c
SETTING DEVICE DETERMINING SECTION
DYNAMIC NETWORK INFORMATION TABLE
SETTING DEVICE DETERMINING FUNCTION SECTION
10b
ROUTING INFORMATION TABLE
10a
(65)
ROUTE SETTING GENERATING SECTION
62
(27)
(30)
61
ROUTE COMPARING SECTION
(24)
(62)
(26)
(64)
PRIORITY ROUTE SELECTION SECTION
60
(31)
(32)
(29)
(67)
(66)
(63)
(25)
(28)
SERVICE MAPPING SECTION
12
12a
SERVICE MAPPING TABLE
SERVICE MAPPING FUNCTION SECTION
12b
(33)
(68)
13
(36)
SERVICE SETTING SECTION
DEVICE SETTING SECTION
13
13b
SNMP TRANSMITTING SECTION
(34)
(69)
(35)
(70)
(37)
COPS TRANSMITTING SECTION
13c
(71)
(39)
(72)
NETWORK INFORMATION COLLECTING SECTION
11
11a
COPS RECEIVING SECTION
(19)
(57)
(20)
(58)
(23)
(61)
50
BAND RESERVATION JUDGMENT POLICY TABLE
(59)
(60)
(21)
(22)
BAND RESERVATION PERMISSION JUDGING SECTION
51

FIG. 16

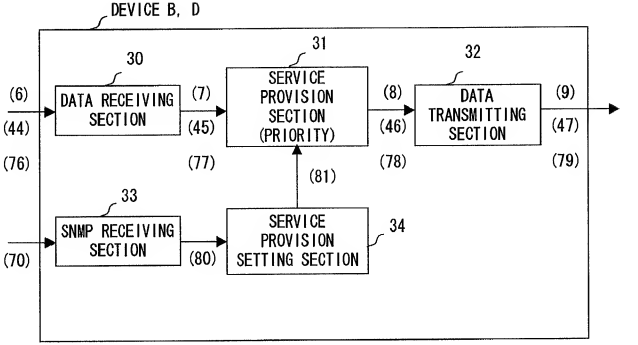
DEVICE B, D
30
31
32
(6)
(44)
(76)
DATA RECEIVING SECTION
(7)
(45)
(77)
SERVICE PROVISION SECTION (PRIORITY)
(8)
(46)
(78)
DATA TRANSMITTING SECTION
(9)
(47)
(79)
(81)
33
34
(70)
SNMP RECEIVING SECTION
(80)
SERVICE PROVISION SETTING SECTION

FIG. 17

(a)

50

USER NAME	USER PRIORITY	CURRENTLY RESERVED BAND	TOTAL ALLOWABLE BAND
Kurose	5	0 Mbps	5 Mbps
Nomura	10	0 Mbps	10 Mbps

BAND RESERVATION JUDGMENT POLICY TABLE

(b)

USER NAME	ROUTE IN USE	CURRENTLY RESERVED BAND	SETTING DEVICE
Kurose	S, B, A, a	5 Mbps	B:3

DATA HELD IN THE SERVICE SETTING STORING SECTION

(c)

12a

DEVICE IP ADDRESS	SETTING PROTOCOL	SETTING CONTENT	SETTING MAPPING INFORMATION	HIGH-FUNCTION INFORMATION
B	SNMP	PRIORITY QUEUE (1, 2, 3)	IF 5Mbps OR MORE IS REQUESTED, TO QUEUE 3. IF 2Mbps OR MORE IS REQUESTED, TO QUEUE 2.	5
D	SNMP	PRIORITY QUEUE (1, 2)		3

SERVICE MAPPING TABLE

FIG. 18

EP 0 687 111 A2

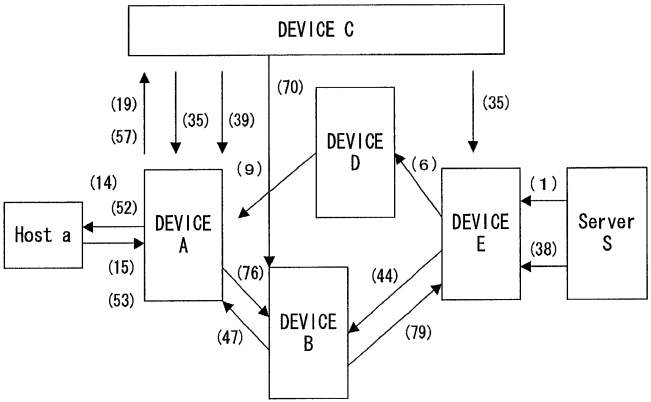

FIG. 19

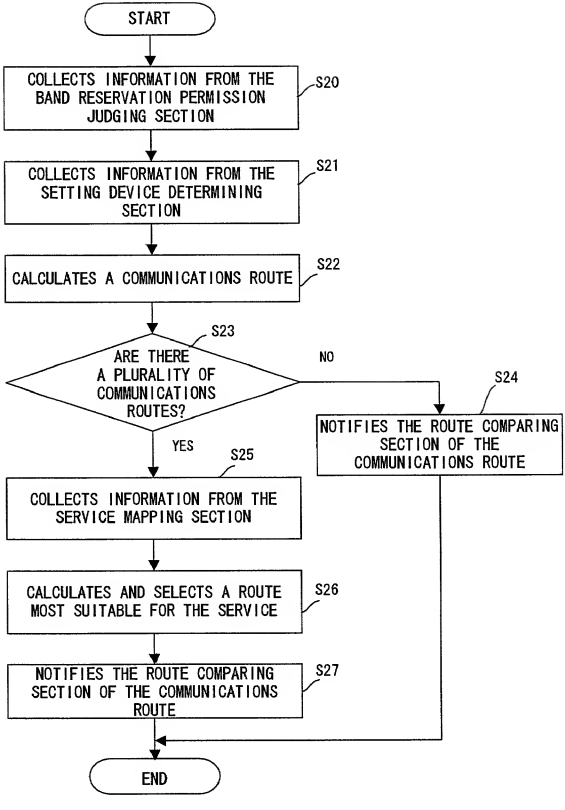
START
COLLECTS INFORMATION FROM THE BAND RESERVATION PERMISSION JUDGING SECTION
S20
COLLECTS INFORMATION FROM THE SETTING DEVICE DETERMINING SECTION
S21
CALCULATES A COMMUNICATIONS ROUTE
S22
S23
ARE THERE A PLURALITY OF COMMUNICATIONS ROUTES?
NO
S24
NOTIFIES THE ROUTE COMPARING SECTION OF THE COMMUNICATIONS ROUTE
YES
S25
COLLECTS INFORMATION FROM THE SERVICE MAPPING SECTION
CALCULATES AND SELECTS A ROUTE MOST SUITABLE FOR THE SERVICE
S26
NOTIFIES THE ROUTE COMPARING SECTION OF THE COMMUNICATIONS ROUTE
S27
END

FIG. 20

FIG. 21 of 25

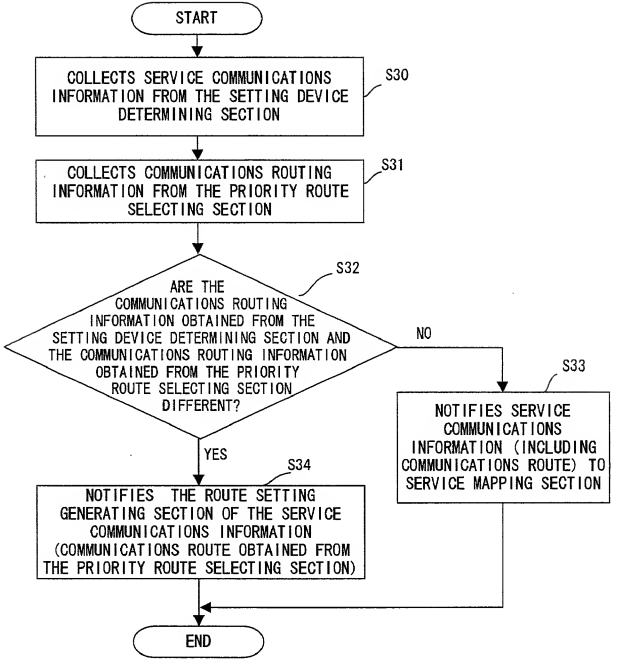

FIG. 21

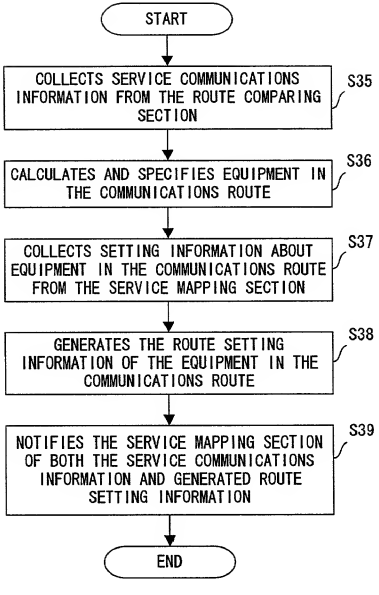
START
COLLECTS SERVICE COMMUNICATIONS INFORMATION FROM THE ROUTE COMPARING SECTION
S35
CALCULATES AND SPECIFIES EQUIPMENT IN THE COMMUNICATIONS ROUTE
S36
COLLECTS SETTING INFORMATION ABOUT EQUIPMENT IN THE COMMUNICATIONS ROUTE FROM THE SERVICE MAPPING SECTION
S37
GENERATES THE ROUTE SETTING INFORMATION OF THE EQUIPMENT IN THE COMMUNICATIONS ROUTE
S38
NOTIFIES THE SERVICE MAPPING SECTION OF BOTH THE SERVICE COMMUNICATIONS INFORMATION AND GENERATED ROUTE SETTING INFORMATION
S39
END

FIG. 22

EDITH-5966660

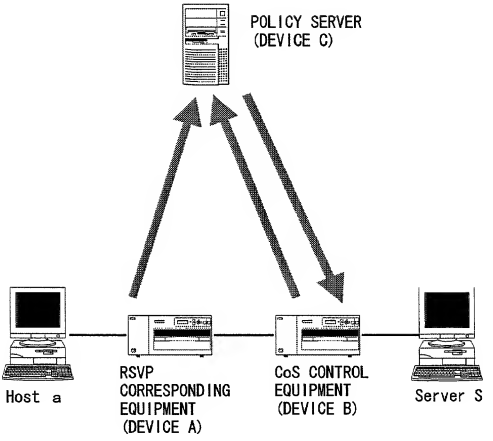

FIG. 23

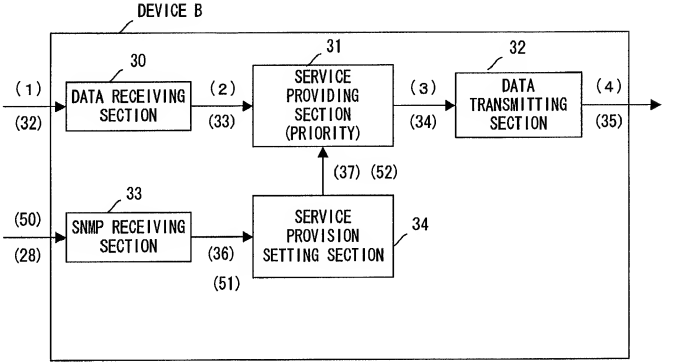
DEVICE B
30
DATA RECEIVING SECTION
31
SERVICE PROVIDING SECTION (PRIORITY)
32
DATA TRANSMITTING SECTION
33
SNMP RECEIVING SECTION
34
SERVICE PROVISION SETTING SECTION
(1)
(32)
(2)
(33)
(3)
(34)
(4)
(35)
(37) (52)
(50)
(28)
(36)
(51)

FIG. 24

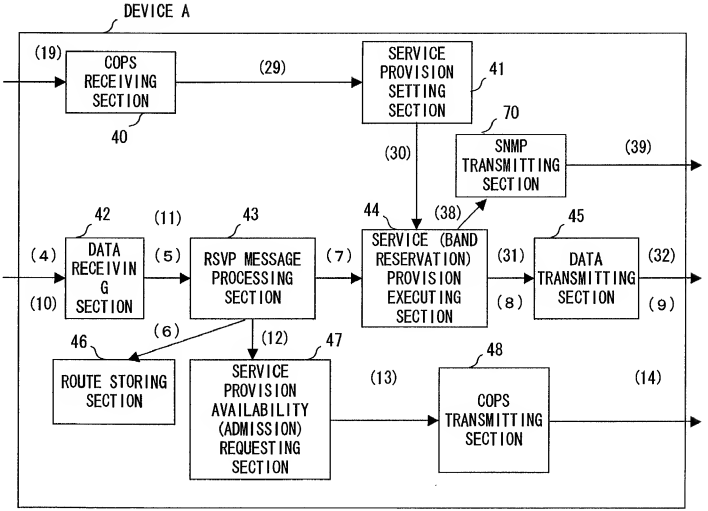
DEVICE A
(19)
COPS RECEIVING SECTION
40
(29)
SERVICE PROVISION SETTING SECTION
41
70
SNMP TRANSMITTING SECTION
(39)
(30)
42
(11)
43
44
(38)
45
(4)
DATA RECEIVING SECTION
(5)
RSVP MESSAGE PROCESSING SECTION
(7)
SERVICE (BAND RESERVATION) PROVISION EXECUTING SECTION
(31)
DATA TRANSMITTING SECTION
(32)
(10)
(8)
(9)
(6)
(12)
46
47
48
ROUTE STORING SECTION
SERVICE PROVISION AVAILABILITY (ADMISSION) REQUESTING SECTION
(13)
COPS TRANSMITTING SECTION
(14)

FIG. 25

TOSHIBA 99866660

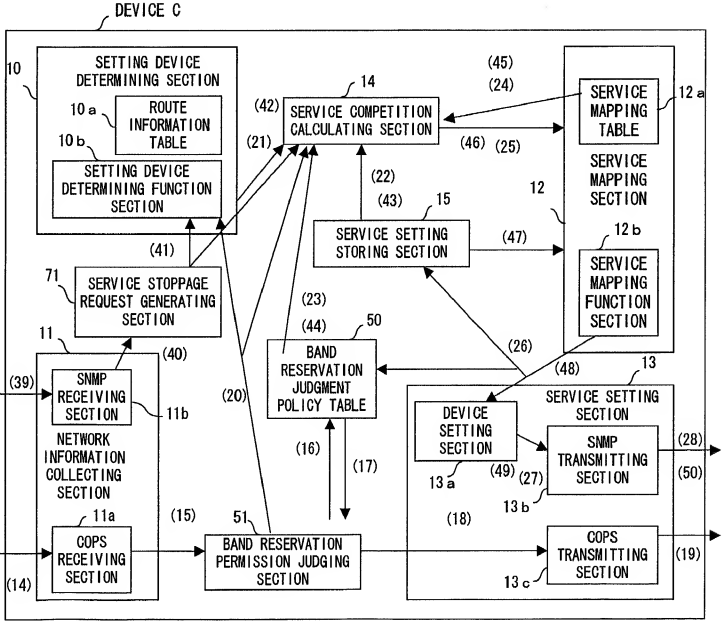

FIG. 26

(a)

50

USER NAME	USER PRIORITY	CURRENTLY RESERVED BAND	TOTAL ALLOWABLE BAND
Kurose	5	0 Mbps	5 Mbps
Nomura	10	0 Mbps	10 Mbps

BAND RESERVATION PERMISSION JUDGING SECTION

(b)

USER NAME	ROUTE IN USE	CURRENTLY RESERVED BAND	SETTING DEVICE
Kurose	S, B, A, a	5 Mbps	B:3

DATA HELD IN THE SERVICE SETTING STORING SECTION

(c)

12a

DEVICE IP ADDRESS	SETTING PROTOCOL	SETTING CANCELING METHOD	SETTING CONTENT	SETTING MAPPING INFORMATION
B	SNMP	CANCELLATION TYPE	PRIORITY QUEUE (1, 2, 3)	IF 5Mbps OR MORE IS REQUESTED, TO QUEUE 3. IF 2Mbps OR MORE IS REQUESTED, TO QUEUE 2.
A	Telent	RESETTING TYPE	5Mbps GUARANTY QUEUE (1) 10Mbps GUARANTY QUEUE (2)	TO A QUEUE NUMBER CORRESPONDING TO A REQUESTED BAND

SERVICE MAPPING TABLE

FIG. 27

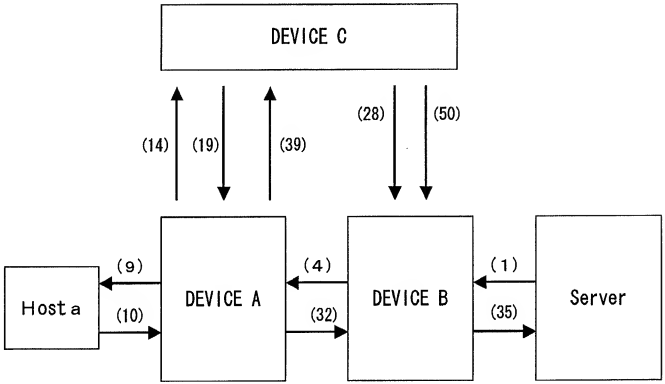
DEVICE C
(14)
(19)
(39)
(28)
(50)
Host a
(9)
(10)
DEVICE A
(4)
(32)
DEVICE B
(1)
(35)
Server

FIG. 28

EP 1 850 530 A1

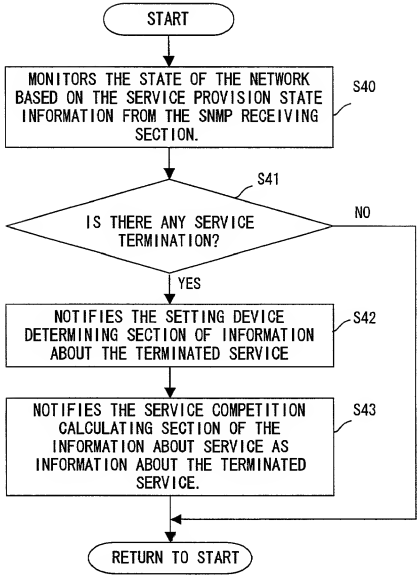

FIG. 29

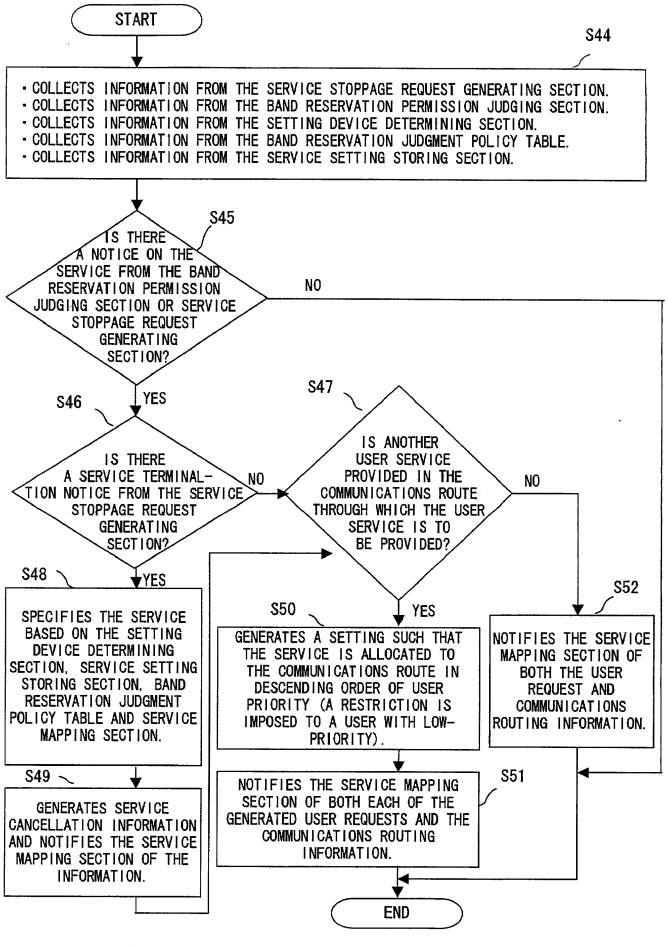
START
S44
・COLLECTS INFORMATION FROM THE SERVICE STOPPAGE REQUEST GENERATING SECTION.
・COLLECTS INFORMATION FROM THE BAND RESERVATION PERMISSION JUDGING SECTION.
・COLLECTS INFORMATION FROM THE SETTING DEVICE DETERMINING SECTION.
・COLLECTS INFORMATION FROM THE BAND RESERVATION JUDGMENT POLICY TABLE.
・COLLECTS INFORMATION FROM THE SERVICE SETTING STORING SECTION.
S45
IS THERE A NOTICE ON THE SERVICE FROM THE BAND RESERVATION PERMISSION JUDGING SECTION OR SERVICE STOPPAGE REQUEST GENERATING SECTION?
NO
YES
S46
IS THERE A SERVICE TERMINATION NOTICE FROM THE SERVICE STOPPAGE REQUEST GENERATING SECTION?
NO
S47
IS ANOTHER USER SERVICE PROVIDED IN THE COMMUNICATIONS ROUTE THROUGH WHICH THE USER SERVICE IS TO BE PROVIDED?
NO
YES
S48
SPECIFIES THE SERVICE BASED ON THE SETTING DEVICE DETERMINING SECTION, SERVICE SETTING STORING SECTION, BAND RESERVATION JUDGMENT POLICY TABLE AND SERVICE MAPPING SECTION.
S49
GENERATES SERVICE CANCELLATION INFORMATION AND NOTIFIES THE SERVICE MAPPING SECTION OF THE INFORMATION.
S50
GENERATES A SETTING SUCH THAT THE SERVICE IS ALLOCATED TO THE COMMUNICATIONS ROUTE IN DESCENDING ORDER OF USER PRIORITY (A RESTRICTION IS IMPOSED TO A USER WITH LOW-PRIORITY).
S51
NOTIFIES THE SERVICE MAPPING SECTION OF BOTH EACH OF THE GENERATED USER REQUESTS AND THE COMMUNICATIONS ROUTING INFORMATION.
S52
NOTIFIES THE SERVICE MAPPING SECTION OF BOTH THE USER REQUEST AND COMMUNICATIONS ROUTING INFORMATION.
END

FIG. 30

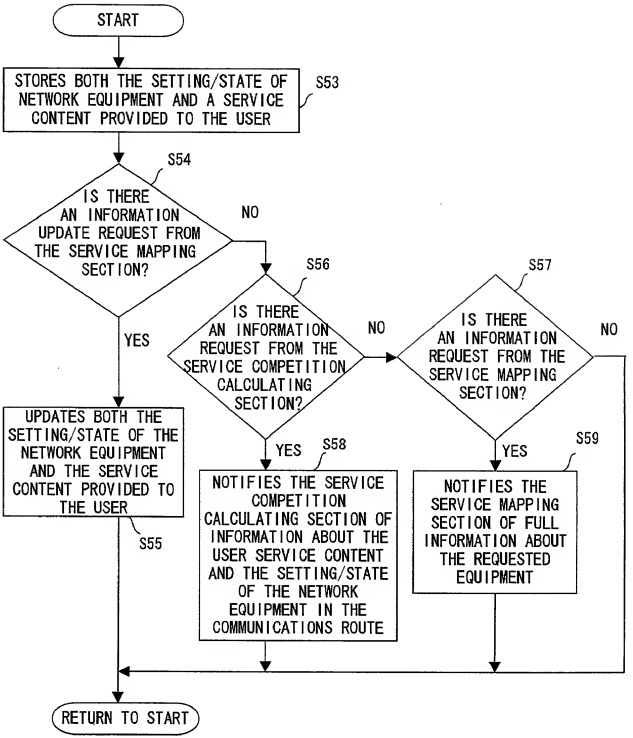
START
STORES BOTH THE SETTING/STATE OF NETWORK EQUIPMENT AND A SERVICE CONTENT PROVIDED TO THE USER
S53
S54
IS THERE AN INFORMATION UPDATE REQUEST FROM THE SERVICE MAPPING SECTION?
NO
YES
S56
IS THERE AN INFORMATION REQUEST FROM THE SERVICE COMPETITION CALCULATING SECTION?
NO
S57
IS THERE AN INFORMATION REQUEST FROM THE SERVICE MAPPING SECTION?
NO
UPDATES BOTH THE SETTING/STATE OF THE NETWORK EQUIPMENT AND THE SERVICE CONTENT PROVIDED TO THE USER
S55
YES
S58
NOTIFIES THE SERVICE COMPETITION CALCULATING SECTION OF INFORMATION ABOUT THE USER SERVICE CONTENT AND THE SETTING/STATE OF THE NETWORK EQUIPMENT IN THE COMMUNICATIONS ROUTE
YES
S59
NOTIFIES THE SERVICE MAPPING SECTION OF FULL INFORMATION ABOUT THE REQUESTED EQUIPMENT
RETURN TO START

FIG. 31

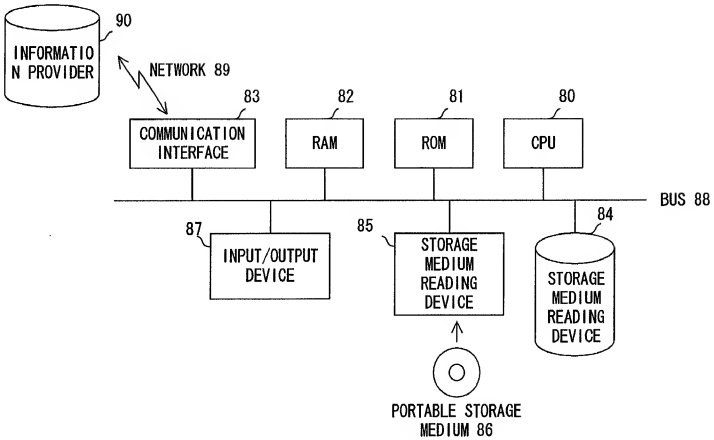
90
INFORMATIO N PROVIDER
NETWORK 89
83
COMMUNICATION INTERFACE
82
RAM
81
ROM
80
CPU
BUS 88
84
87
INPUT/OUTPUT DEVICE
85
STORAGE MEDIUM READING DEVICE
STORAGE MEDIUM READING DEVICE
PORTABLE STORAGE MEDIUM 86

FIG. 32